

STUDY ON FOVEAL AVASCULAR ZONE AND SUBFOVEAL CHOROIDAL VASCULATURE IN TYPE II DIABETIC PATIENTS USING SWEEP SOURCE OPTICAL COHERENCE TOMOGRAPHY

ABSTRACT

INTRODUCTION:

Diabetic retinopathy is the leading cause of blindness, which can be prevented by early diagnosis and treatment. In clinical practice fluorescence angiogram is a valid tool used for diagnosis and treatment. Optical coherence tomography (OCT) made a revolutionary change in diagnosis and treatment of retinal diseases. Optical coherence angiogram (OCT A) is a newer noninvasive technique used to study the superficial and deep vascular changes in diabetic retinopathy.

OBJECTIVES:

The aim of this study is to describe subfoveal choroidal vasculature and foveal avascular (FAZ) in patient with type 2 diabetes and age match control (40-60 years). To compare the FAZ changes in superficial and deep vascular layers, subfoveal choroidal thickness and correlation of vision among various groups.

METHOD:

This was a cross sectional comparative study which included 166 eyes of 84 patients and patients were sub divided in to 4 groups, controls (n-38eyes),no diabetic retinopathy (n-48 eyes) mild non proliferative diabetic retinopathy[NPDR](n-35 eyes) and mild NPDR to proliferative diabetic retinopathy(n-45eyes). All patient was imaged with Swept – Source Optical Coherence Tomography (TOPCON DRI TRITON Plus).Fundus photo, macular 9mm line scan and radial

scan, OCTA used to visualize the superficial and deep capillary plexuses .Blinding done to interpretation the images.

RESULTS:

Duration of disease is associated with severity of retinopathy ($P=0.004$),comparing clinical grading and fundus photo grading -showed agreement of 65.74% with a Kappa value of 0.3898 (Fair agreement), FAZ irregularity (that is number of notches) to increase as the diabetic retinopathy worsened from no diabetic retinopathy to proliferative diabetic retinopathy ($P=0.03$), when comparing with controls no difference of FAZ vertical and horizontal extent in superficial and deep layer($P=1.00$), however FAZ area was larger than the superficial area ($P=0.000$). We found that patients with moderate NPDR or worse the fovea was thicker than controls ($P=0.000$), manual measure subfoveal choroidal was thin($P=0.04$) when comparing with default measurement ($P=1.00$).The machine default choroidal measurement is underestimated($P=0.001$), and the average retinal thickness of moderate NPDR to PDR ($P=0.00$) is thicker.

CONCLUSION:

FAZ irregularity, increasing FAZ area suggests a more advance stage of diabetic retinopathy. We too have confirmed that the superficial FAZ was smaller than the deep FAZ. Due to the lack of clarity of the deep capillary net work, delineation of the edges is more difficult and studying of its irregularity cannot be relied on at this stage in this machine. Considering that the vertical and horizontal extent of the FAZ are same in our study it appeared that the FAZ area more round than oval. There was a suggestion that choroidal thinning may be associated with poorer vision in diabetics however age is a confounder and one needs to be careful to draw any conclusions.